

CLAIMS

1. An operation history utilization system which utilizes a user's operation history on a device, and provides the user with service, the system comprising:

5 a device which has a function of transmitting operation data that describes the user's operation details; and

a service provision apparatus which accumulates the operation data transmitted from the device as operation history data in chronological order, and provides service according to the user's behavior predicted from a frequent operation pattern included in the accumulated operation history data.

2. The operation history utilization system according to Claim 1, wherein said service provision apparatus includes:

15 a user server apparatus which accumulates the operation history data, and predicts the user's behavior from the frequent operation pattern included in the accumulated operation history data; and

an application server apparatus which provides service according to the user's behavior predicted by said user server apparatus.

3. The operation history utilization system according to Claim 1, wherein said service provision apparatus includes:

25 a user server apparatus which accumulates the operation history data; and

an application server apparatus which predicts the user's behavior from the frequent operation pattern included in the operation history data accumulated in said user server apparatus, and provides service according to the predicted user's behavior.

4. The operation history utilization system according to Claim 1,

wherein said device includes:

an operation history storage unit operable to store operation history data in which date and time of an operation and details of an operation are paired; and

5 an operation history transmission unit operable to transmit operation history data to said service provision apparatus at a predetermined timing, the operation history data being stored in said operation history storage unit.

10 5. The operation history utilization system according to Claim 4, wherein said device further includes a viewing history storage unit operable to store viewing history data related to content viewed by the user, and

 said operation history transmission unit is operable to
15 transmit, to said service provision apparatus, the viewing history data stored in said viewing history storage unit together with the operation history data.

 6. The operation history utilization system according to Claim 4,
20 wherein said device further includes a user identification unit operable to identify the user who performed the operation, and

 said operation history storage unit is operable to store the result identified by said user identification unit as a part of the operation history.

25 7. The operation history utilization system according to Claim 4, wherein said device is operable to store information as a part of the operation history into said operation history storage unit, the information describing who a communication partner is.

30 8. The operation history utilization system according to Claim 1, wherein said service provision apparatus includes:

an operation history reception unit operable to receive the operation history data transmitted from said device;

an operation history database unit operable to accumulate the received operation history data;

5 a pattern extraction unit operable to extract a frequent operation pattern from the operation history data accumulated in said operation history database unit;

a pattern database unit operable to store the extracted frequent operation pattern;

10 a pattern monitor unit operable to monitor whether or not a sequence of operation history data corresponds with the frequent operation pattern stored in said pattern database unit, the operation history data being newly received by said operation history reception unit; and

15 a service provision unit operable to provide service according to the user's behavior predicted from a result of monitoring performed by said pattern monitor unit.

9. The operation history utilization system according to Claim 8,

20 wherein said service provision apparatus further includes a function and action database unit in which at least one of the following relations is predetermined: (i) a relation between an operation performed by said device and a function provided to the user in response to the operation; and (ii) a relation between an
25 operation performed by said device and an action considered as the action that the user desires to perform by the operation, and

 said pattern extraction unit is operable to compare the operation history data accumulated in said operation history database unit with said function and action database unit, to convert
30 the operation history data into a sequence of function or action, to extract a frequent pattern from the sequence of function or action, and to store the extracted frequent pattern into said pattern

database unit.

10. The operation history utilization system according to Claim 8, wherein said service provision apparatus includes:

5 a viewing history reception unit operable to receive the viewing history data transmitted together with the operation history data from said device; and

a viewing history database unit operable to accumulate the received viewing history data, and

10 said pattern extraction unit is operable to extract a frequent pattern from each of the operation history data accumulated in said operation history database unit and the viewing history data accumulated in said viewing history database unit.

15 11. The operation history utilization system according to Claim 8, wherein said pattern extraction unit is operable to utilize information regarding the operation user so as to extract the frequent operation pattern, the information being transmitted from said device.

20 12. The operation history utilization system according to Claim 8, wherein said pattern extraction unit is operable to utilize information regarding the communication partner so as to extract the frequent operation pattern, the information being transmitted
25 from said device.

13. The operation history utilization system according to Claim 1, comprising a plurality of devices which transmit respective operation data that describes the user's operation details,

30 wherein said service provision apparatus accumulates the operation data transmitted from the plurality of devices as operation history data in chronological order, and provides service according

to the user's behavior predicted from a frequent operation pattern included in the accumulated operation history data.

14. The operation history utilization system according to Claim 1,
5 wherein said service provision apparatus provides the service by automatically controlling said device according to the frequent operation pattern.

15. An operation history utilization method for utilizing a user's
10 operation history and providing the user with service, the method comprising steps of:

transmitting operation data that describes the user's operation details, said transmitting being performed by a device;

15 accumulating the operation data transmitted from the device as operation history data in chronological order; and

providing service according to the user's behavior predicted from a frequent operation pattern included in the accumulated operation history data.

16. The operation history utilization method according to Claim
20 15, the method comprising steps of:

storing operation history data in which date and time of an operation and details of an operation are paired; and

25 transmitting the stored operation history data from said device at a predetermined timing.

17. The operation history utilization method according to Claim
15, the method comprising steps of:

30 receiving the operation history data transmitted from said device;

accumulating the received operation history data into an operation history database unit;

extracting a frequent operation pattern from the operation history data accumulated in said operation history database unit;

storing the extracted frequent operation pattern into a pattern database unit;

5 monitoring whether or not a sequence of newly received operation history data corresponds with the frequent operation pattern stored in said pattern database unit; and

providing service according to the user's behavior predicted from a result of monitoring.

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18. A device in an operation history utilization system which provides a user with service by utilizing the user's operation history on the device, the device comprising:

an operation data transmission unit operable to transmit
15 operation data describing the user's operation details; and

a control unit operable to accumulate the operation data transmitted from the device as operation history data in chronological order, and to control the device following an instruction from a service provision apparatus which provides
20 service according to the user's behavior predicted from a frequent operation pattern included in the accumulated operation history data.

19. A service provision apparatus which provides a user with
25 service by utilizing the user's operation history on the device, the apparatus comprising:

a reception unit operable to receive operation data describing the user's operation details transmitted from the device; and

a service provision unit operable to accumulate the received
30 operation data as operation history data in chronological order, and to provide service according to the user's behavior predicted from a frequent operation pattern included in the accumulated operation

history data.

20. A program for a device included in an operation history utilization system which provides a user with service by utilizing the user's operation history on the device, the program causing a computer to execute steps of:

transmitting operation data describing the user's operation details; and

accumulating the operation data transmitted from the device as operation history data in chronological order, and controlling the device following an instruction from a service provision apparatus which provides service according to a user's behavior predicted from a frequent operation pattern included in the accumulated operation history data.

21. A program for a service provision apparatus which provides a user with service by utilizing the user's operation history on a device, the program causing a computer to execute steps of:

receiving operation data describing the user's operation details transmitted from the device; and

accumulating the received operation data as operation history data in chronological order, and providing service according to the user's behavior predicted from a frequent operation pattern included in the accumulated operation history data.